Digitized by the Internet Archive
in 2010 with funding from
Lyrasis Members and Sloan Foundation

http://www.archive.org/details/reportofcommissi1884dela

17

REPORT

OF THE

COMMISSIONERS OF FISHERIES

OF

MARYLAND,

JANUARY, 1884

THOMAS HUGHLETT, G. W. DELAWDER,

Commissioners of Fisheries of Maryland.

ANNAPOLIS:
JAMES YOUNG, STATE PRINTER.
1884.

Report of the Fish Commission.

To his Excellency, WILLIAM T. HAMILTON,
Governor of the State of Maryland.

DEAR SIR: In accordance with the requirements of the law, it becomes our duty to submit the report of another year's work of the Fish Commission, and it is, in addition to the duty, a great pleasure, because of the fortunate measure of success which has attended our labors.

Providence, in His bounteous gifts to man, seems not to have forgotten the people of Maryland, but, rather, to have placed within their reach resources as wonderful as they are rich. The mines of Western Maryland furnish an industry to its people, the wealth of which cannot as yet be estimated. The quarries of another section of the state have become celebrated throughout this great country. The agricultural lands of still other parts are the pride and boast of its people. But agriculture, mines and quarries do not alone constitute the wealth of a people—these unquestionably carry with them their indispensable uses and wonderful influences—but the cultivated pond, lake, stream and river lend a privilege of added value and attraction. Nature, in her gracious supply of stream, river and bay in Maryland, dividing the state itself into two almost separate parts, makes a complete network of the Eastern Shore, and gives to Southern Maryland a water supply rarely equalled in this country. The Eastern Shore, although much smaller in area, furnishes a little more than twice the water front of the Western Shore, its grand rivers offering peculiar advantages for operations in pisciculture.

For a long time the success of pisciculture was questioned, but the results of the last ten years have put it beyond all doubt. The experience of the people of Maryland, so far as their fish supply is concerned, is but the experience of every

other state in the Union. The waters of Maryland, in its early settlement, fairly teemed with fish, and the fact that settlements were all made on the waters but attests the value placed by our forefathers upon this food product. As the population of this state increased, the demand for food supplies increased. Those who were living upon the rivers found it profitable to make a "business" of fishing, and every device by which this unwary animal could be caught or hooked has been procured and used to such an unreasonable extent that, at one time, our waters were well nigh depleted. This, as we have already said, was the experience of all the other states, and to such an alarming extent that necessity, which is the mother of discovery as well as invention, suggested the plan of artificial propagation. At first there was little faith in this, and it was the subject of much ridicule. It soon, however, attracted the attention of the greatest minds at home and abroad, and the success of it has now become a settled fact. Indeed, it is a matter of some surprise that it should fail to address itself to the understanding of even an ordinary mind. There can be no greater reason why nature should not be assisted in hatching fish than in producing anything else. In both the animal and vegetable creation, from the highest order of beings to the lowest, from the weed to the most exquisite flower, if left to nature, without assistance, the birth alive and the growth afterwards would be a thing of great doubt. The truth of this is verified by the observation of us all, and is an experience of every day life. There are many reasons why artificial propagation of fish is very desirable. There is scarcely a stream of any size in this state that is not now weekly and even daily traversed by steamboats, and it has been clearly shown that the waves made by such boats are fatal to the eggs of the fish. The fish deposit the eggs upon brush or grass, and there they should stay and be shaken by the ripple of the water until they hatch; but when the steamboats come up the rivers the waves wash the eggs from the place of deposit and land them on the shore, where in a few minutes they are destroyed. It is a common thing on our river shores

to find eggs conveyed there in this way. Artificial propagation is simply taking the eggs and placing them in carefully constructed boxes or cones, where they are thoroughly protected and placed in the water to let nature hatch in the same way that it would do were the eggs deposited on the brush or grass. There is no great mystery about it, it is a very simple thing, requiring more energy in procuring, and care in handling the eggs, than anything else. Again, where the eggs are left to nature alone, they furnish food for other fish to prey upon.

The policy of the appropriation for the support of the Maryland Fish Commission has been frequently attacked, and is a subject of discussion amongst many of our people. Of the advantages of the Fish Commission in this state there can be no doubt, although it may fall to the lot of few people who may have the subject for consideration to see them. We have no hesitation in saying that it has been a subject of diligent inquiry with us amongst the fishermen and those living in close proximity to our fisheries to ascertain whether the fish are increasing or diminishing, and the causes therefor. The result of such inquiries has invariably shown that the fish are increasing, in spite of bad laws protecting them, and an almost infinite number of seines and nets of every conceivable variety for catching them. It was stated to us by a gentleman of unquestioned veracity, that during the past year he saw young shad used on the Choptank as bait to catch other fish, something we venture to say that has never been done before. These were doubtless the young shad hatched and deposited a few months previous in the Tuckahoe, a tributary of the Choptank.

The fish, in all of the rivers where the young have been deposited yearly by the commission, have gradually but perceptibly increased.

The introduction of foreign fish in our waters, and the success in naturalizing them, if such an expression can be permitted, is a benefit which would more than compensate the people at large for all the appropriation ever made to conduct the commission. The introduction of the carp into this state

was a great acquisition, but when they are distributed in all the rivers of the state, where the experiments of the commission have shown they will thrive quite as well as in ponds, and where their present means of supply will soon enable it to deposit them, it will be a blessing which can not be overestimated. We shall have more to say about this fish under a distinct head.

It would be a waste of words for us to say anything in relation to the value and importance of our fish supply to the people of the state, rich and poor. To the rich they are luxuries, to the poor they are a necessity. Our fish markets are famous; and with the exception of our staple products, we venture to say that there is no source of revenue so great, and at the same time so general, to the people of this state, as the fish from its waters afford. It has long been an *industry* in Maryland, and is the only one in our knowledge without adequate protection; but about the laws regulating the catching of fish we shall have more to say in our conclusion.

The commission has pursued the policy of having hatching stations on all of the principal rivers on the Eastern Shore, viz, on Tuckahoe creek, the Choptank river, the Nanticoke, Wicomico and Chester rivers, under the immediate supervision of Commissioner Hughlett, and on the Susquehanna under the immediate supervision of Commissioner Delawder. The advantages of having so many stations, in saving the transportation of young fish and in securing a greater number of ripe fish, are so conclusive to us, that we would have a station on every river in the state, if the appropriation was sufficient to warrant it. We have used the appropriation to the best advantage known to us, and have labored faithfully and assiduously to accomplish the most work possible with it. We have hatched and distributed since our last report about thirty millions of fish, consisting of shad, perch, herring, trout, white fish and carp. The number of eggs taken, fish hatched, and place and number of depots, will appear under the work of each station, and tabulated report of the fish, which will follow.

Hatching Station on the Tuckahoe.

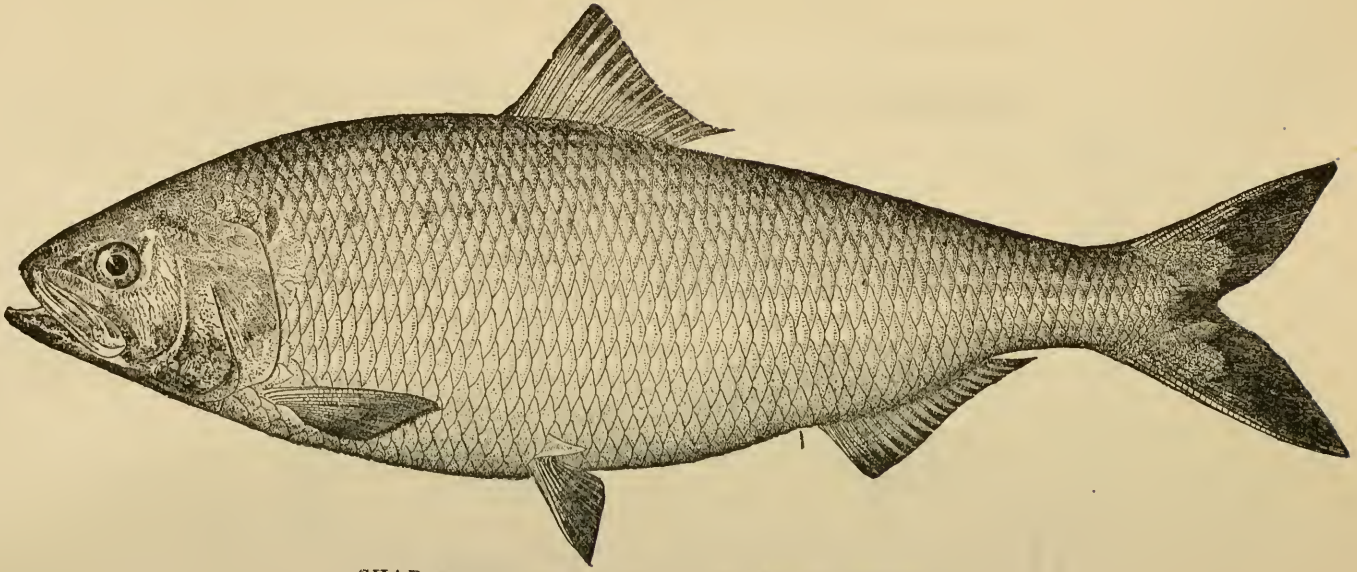
This station, as was said in a previous report, is located at a protected spot on Tuckahoe creek, called Coward's point. Tuckahoe creek itself is a tributary of the Choptank river, which is probably the grandest stream in Maryland. It would be surprising to the people of Maryland, at large, to find out how many people from Caroline, Talbot and Dorchester counties depend, to a very large extent, upon their fishing in the Choptank. And it takes but a cursory glance from any one traveling on the Maryland Steamboat Company's boats to observe how largely Baltimore's fish markets are supplied from this river alone. The station on Tuckahoe has mainly been directed to shad hatching, although whenever ripe, perch or herring were caught they were hatched also. During the last fall the commission procured from Hon. Spencer F. Baird, one hundred and fifty thousand white fish eggs, and purchased sixty thousand trout eggs from Livingston Stone, and placed fifty thousand of the former and ten thousand of the latter at this station, for the purpose of seeing whether they could be hatched there. The success of the experiment was very flattering, as will appear from the tabulated report. The commission has met with more success in hatching shad at this station than elsewhere. During the last two years we have had less trouble in procuring fish from the fishermen than heretofore, and our effort has always been to get the people interested in the work of the commission, and particularly to get the fishermen interested, for to them after all we must look for ripe fish. If we can get them to appreciate fully the work of the commission, we would have no doubt about their co-operation. This year we have no complaint to make, but think we have gotten as much assistance from them as we could expect, and our tables will show the good results of our work.

White Fish on the Tuckahoe.

Date.	Eggs received.	Fish hatched.	Where deposited.	Number deposited.	Fish lost.	Eggs lost.	Average temperature. Air.	Average temperature. Water.
1882.								
Dec. 30.	50,000	....	.....	....	..	..	....	....
1883.								
Feb. 12.	....	49,407	.....	....	..	..	....	....
Feb. 14.	....	....	Deep Branch.....	10,000	..	..	....	....
Feb. 15.	....	....	Tuckahoe Creek..	10,000	..	..	....	....
Feb. 16.	....	....	Greensborough...	10,000	..	..	....	....
Feb. 17.	....	....	Third Haven.....	10,000	..	..	....	....
Feb. 18.	....	....	Sherwood's Mills.	8,861	..	..	....	....
Mar. 4.	....	....	Deep Branch.....	492	..	..	....	....
.....	....	....	.....	....	54	593	34½°	38½°
	50,000	49,407		49,353				

Trout at Tuckahoe.

Date.	Eggs Received.	Fish Hatched	Where Deposited.	Number Deposited.
1883.				
Dec. 30...	10,000	.....	.....	.....
Jan. 17 to Feb. 21...	.....	9,789	.....	.....
" 15...	.....	.....	Deep Branch, Caroline Co...	3,266
" 20...	.....	.....	Sherwood's Mills, Talbot Co.	3,266
" 24...	.....	.....	King's Creek, " "	3,266
				9,798



SHAD (a little more than ½ natural size). *Alosa sapidissima* (*male*).

Shad Operations at Coward's Point.

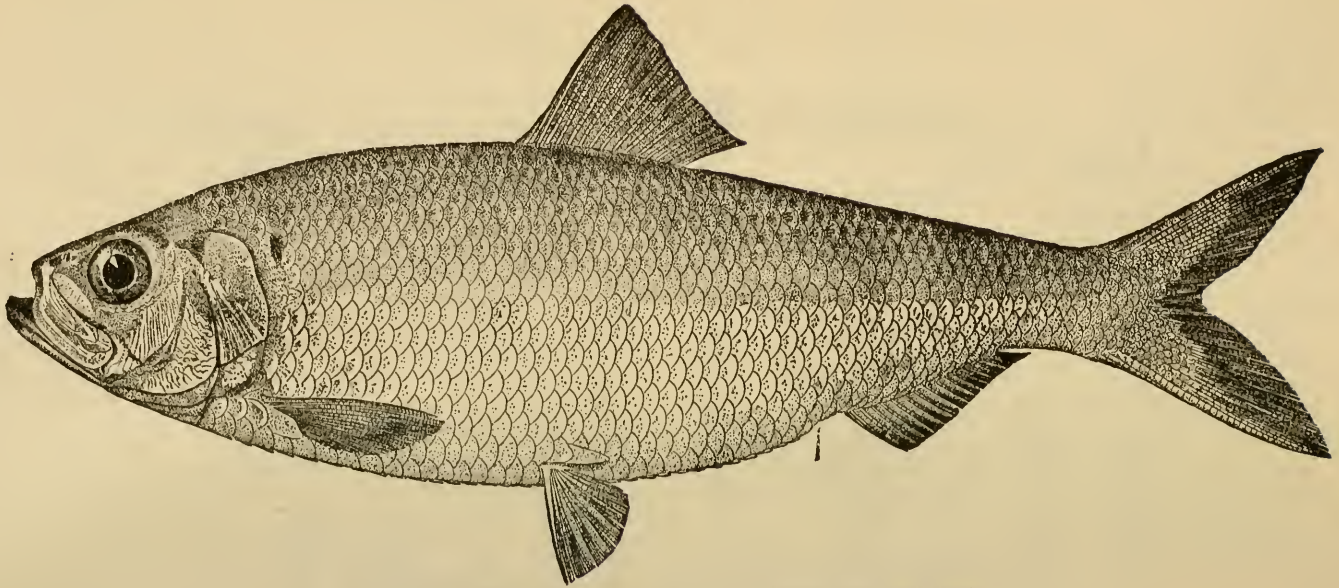
Date. 1883.	Eggs Taken. Male.	Eggs Taken. Female.	Eggs Taken.	Fish Hatched.	Fish Deposited.
April 12	17	15	300,000	.....	.....
" 13	10	8	160,000	.....	.....
" 14	9	8	160,000	.....	.....
" 15	2	2	40,000	.....	.....
" 16	9	7	140,000	.....	.....
" 17	11	7	140,000	.....	.....
" 18	8	5	100,000	.....	.....
" 19	6	4	80,000	140,000	Tuckahoe Creek.
" 20	4	3	60,000	.....	.....
" 21	5	4	80,000	180,000	Tuckahoe Creek.
" 22	3	3	60,000	.....	.....
" 23	..	..	.....	250,000	Tuckahoe Creek.
" 24	..	..	.....	250,000	" "
" 25	1	1	20,000	.....	.....
" 26	3	2	40,000	.....	.....
" 27	..	..	.....	.....	.....
" 28	9	7	40,000	....	.....
" 29	1	1	20,000	100,000	Tuckahoe Creek.
" 30	..	..	.....	.....	.....
May 1	4	3	60,000	100,000	Tuckahoe Creek.
" 2	7	5	100,000	80,000	" "
" 3	7	6	120,000	.....	.....
" 4	13	11	220,000	150,000	Choptank River.
" 5	15	12	240,000	.....	.....
" 6	5	3	60,000	100,000	Tuckahoe Creek.
" 7	9	7	140,000	240,000	Wye River.
" 8	15	15	300,000	250,000	Miles River.
" 9	27	21	420,000	.....	.....
" 10	19	17	340,000	300,000	Third Haven Riv.
" 11	29	21	420,000	300,000	Choptank River.
" 12	8	6	120,000	150,000	Tuckahoe Creek.
" 13	11	7	140,000	540,000	North-East River
" 14	5	4	80,000	.....	.....
" 15	1	1	20 000	360,000	Elk River.
" 16	1	1	20,000	.....	.....
" 17	5	5	100,000	.....	.....
" 18	17	14	280,000	30,000	Tuckahoe Creek.
" 19	2	2	40,000	15,000	" "
" 20	5	7	140,000	.....	.....
" 21	20	21	420,000	120,000	Tuckahoe Creek.
" 22	18	22	440,000	125,000	" "
" 23	10	12	240,000	.....	.....
" 24	15	13	260,000	300,000	Tuckahoe Creek.
" 25	17	15	300,000	20,000	" "
" 26	19	17	340,000	.....	.....
" 27	..	..	.....	500,000	Tuckahoe Creek.
" 28	27	25	500,000	.....	.....
" 29	18	15	300,000	500,000	Nanticoke River.
" 30	23	20	400,000	400,000	Tuckahoe Creek.
" 31	19	17	340,000	.....	.....

Shad Operations at Coward's Point—Continued.

Date.	Fish Taken.		Eggs Taken.	Fish Hatched.	Fish Deposited.
1883.	Male.	Female.			
June 1	22	21	420,000	300,000	Tuckahoe Creek,
" 2	21	18	360,000	.....	.....
" 3	5	4	80,000	300,000	Tuckahoe Creek.
" 4	23	20	400,000	500,000	Choptank River.
" 5	..	..	.....	300,000	Tuckahoe Creek.
" 6	..	..	.....	100,000	" "
			9,600,000	7,000,000	

Herring Operations at Tuckahoe Station.

Date.	Fish taken.		Eggs taken.	Fish hatched.	Fish deposited.
1883.	Male.	Female.			
April 6	2	1	20,000	.....	.....
April 9	3	2	35,000	.....	.....
April 10	3	2	30,000	.....	.....
April 11	4	2	40,000	.....	.....
April 13	..	..	.....	55,000	Tuckahoe Creek
April 14	1	1	20,000	45,000	Tuckahoe Creek
April 17	1	1	20,000	.....	.....
April 23	..	..	.....	15,000	Tuckahoe Creek
May 4	4	3	60,000	.....	.....
May 7	4	2	40,000	47,000	Tuckahoe Creek
May 9	..	..	.....	35,000	Tuckahoe Creek
	22	14	265,000	197,000	



BRANCH-HERRING (⅔ natural size). *Pomolobus vernalis* (*male*).

White Perch Operations at Tuckahoe Station.

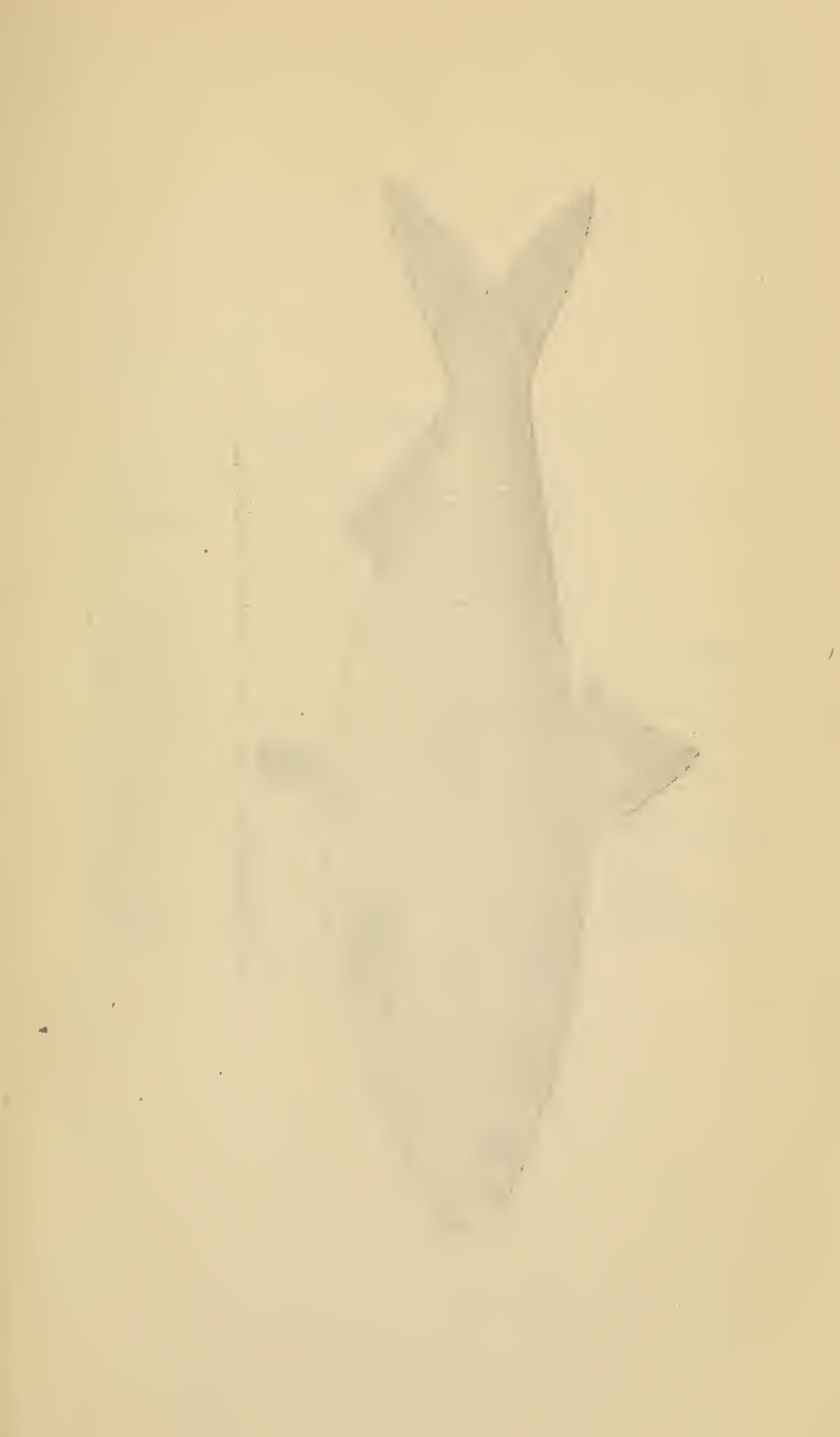
Date.	Fish taken.		Eggs taken.	Fish hatched.	Fish deposited.
	Male.	Female.			
1883.					
April 6	5	3	60,000	.....	.....
April 13	..	..	.....	57,000	Tuckahoe Creek
April 28	5	6	120,000	.....	.....
April 29	5	4	80,000	.....	.....
May 4	..	..	.....	160,000	Choptank River
May 5	3	2	30,000	.....	.....
May 7	..	..	.....	10,000	Tuckahoe Creek
May 9	..	..	.....	25,000	Tuckahoe Creek
	18	15	290,000	252,000	

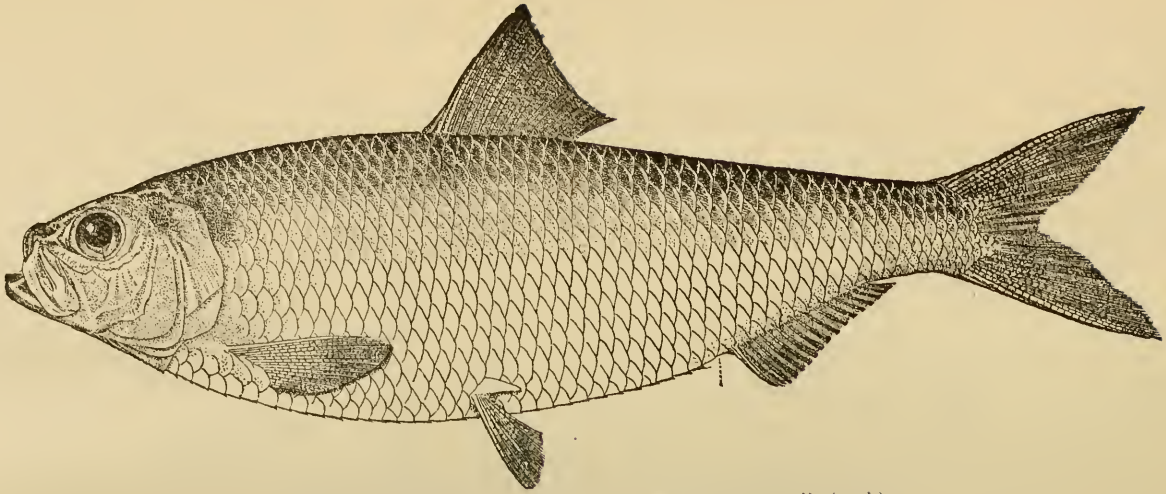
Hatching Station at Kingston.

Kingston is on the Choptank river, and is, properly speaking, the Perch station. The commission has operated here before, and been remarkably successful in hatching white perch. Although really a perch station, we never lost the opportunity to hatch other fish whenever ripe ones could be procured. In addition to the perch, a few ripe herrings were caught, and their eggs were also hatched. The commission has, for several years past, hatched a great many white perch at this station, and not being a migratory fish, like the shad, we are looking forward with great interest to the good results that are to follow. These are not expected until next year, by which time those first deposited should be grown and caught.

Herring at Kingston.

Date.	Fish taken.		Eggs taken.	Fish hatched.	Fish deposited.
	Male.	Female.			
1883.					
May 4	5	3	75,000	.....	.....
May 9	..	..	.....	50,000	Tread Avon Riv.
May 10	2	1	25,000	.....	.....
May 15	..	..	.....	20,000	Choptank River
	7	1	100,000	70,000	





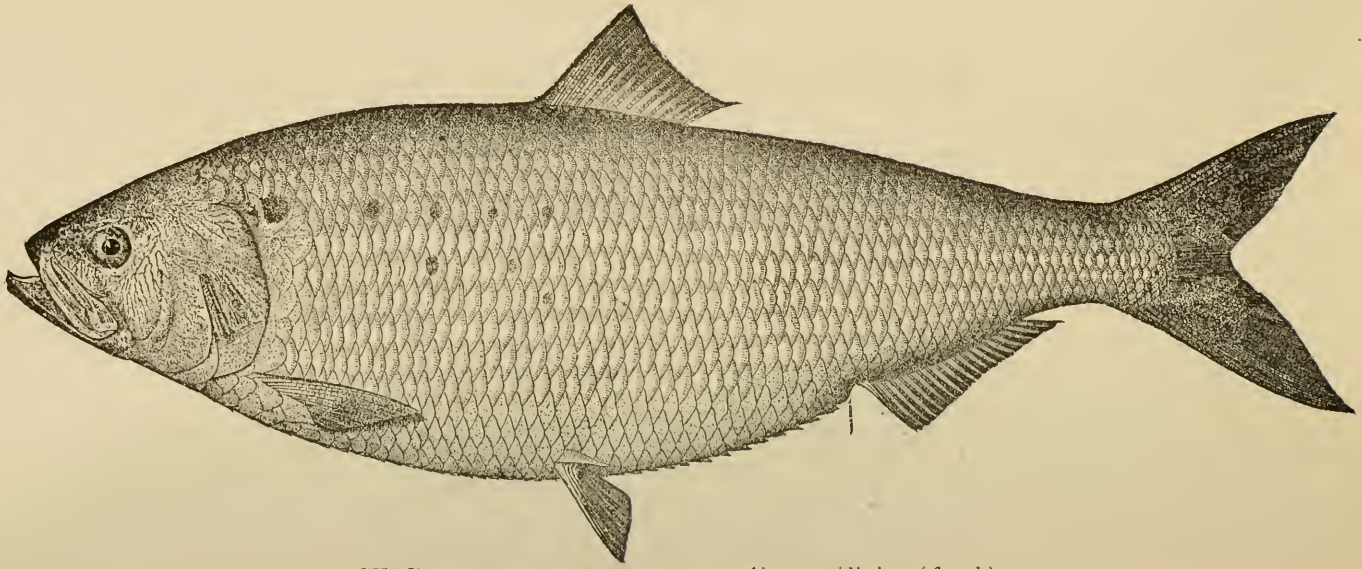
GLUT-HERRING (½ natural size). *Pomolobus æstivalis (male).*

White Perch at Kingston.

Date.	Fish taken.		Eggs taken.	Fish hatched.	Fish deposited.
	Male.	Female.			
1883.					
April 16	15	13	260,000	.. ...	.....
April 20	12	9	180,000	.....	.....
April 21	..	..	.....	230,000	Choptank River.
April 23	16	13	260,000	.....	.....
April 27	8	5	100,000	.....	.....
April 29	..	..	.....	175,000	Choptank River.
April 30	40	33	660,000	230,000	Choptank River.
May 4	13	9	180,000	90,000	Choptank River.
May 4	7	4	80,000	.....	.....
May 5	..	..	.....	600,000	Choptank River.
May 7	8	7	140,000	.....	.....
May 9	..	..	.....	160,000	Tread Avon River.
May 9	..	..	.....	70,000	Choptank River.
May 11	9	6	120,000	.....	....
May 16	..	..	.....	75,000	Wye River.
May 16	..	..	.....	70,000	Miles River.
May 16	..	..	.....	75,000	Choptank River.
	128	99	1,980,000	1,775,000	

Hatching Station on the Nanticoke.

The station on this river is located at or near Vienna. The Nanticoke is a beautiful stream dividing Dorchester from Wicomico county, and running far over into Delaware. The commission has operated on this river in previous years, but never with the success accomplished this year. Heretofore we have hatched mainly shad and herring, but this year it is the banner station in white perch hatching. We have not found it more difficult to hatch perch eggs than shad, and as the white perch is considered by far the best flavored fish in our water, we are exceedingly anxious to have them abundant. The record of perch hatching at this station is a matter of pride to the commissioners, and that of the herring scarcely less so, whilst the shad is not quite so pleasing, and that arose because we were unable to get the ripe fish. Even as it is we were able to deposit many more shad here, by reason of having the station, than we could have done had we been compelled to transport the young shad from some other station.



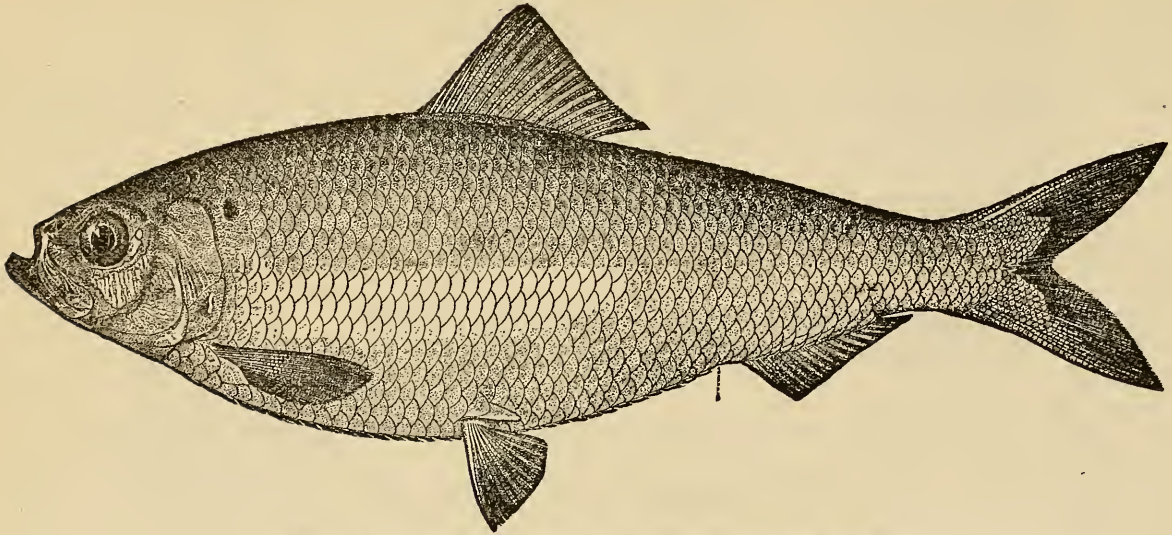
SHAD (a little less than ½ natural size). *Alosa sapidissima* (*female*).

Shad on the Nanticoke River.

Date.	Fish taken.		Eggs taken.	Fish hatched.	Fish deposited.
	Male.	Female.			
1883.					
April 17	2	1	20,000	.....	.....
" 18	1	1	20,000	.....	.....
" 20	2	1	20,000	.....	.....
" 21	2	1	20,000	.....	.....
" 23	..	..	.....	35,000	Nanticoke River.
" 24	1	1	20,000	.....	.....
" 25	2	1	20,000	35,000	Nanticoke River.
" 28	3	2	40,000	15,000	" "
" 29	..	..	.....	15,000	" "
" 30	8	6	120,000	.....	.....
May 1	4	3	60,000	35,000	Nanticoke River.
" 2	2	2	40,000	.....	.....
" 3	5	3	60,000	.....	.....
" 4	3	2	40,000	110,000	Nanticoke River.
" 5	5	4	80,000	65,000	" "
" 6	5	3	60,000	35,000	" "
" 7	4	2	40,000	50,000	" "
" 9	..	..	.....	35,000	" "
" 12	..	..	.....	160,000	" "
	49	33	660,000	590,000	

Herring Operations on the Nanticoke River.

Date.	Fish taken.		Eggs taken.	Fish hatched.	Fish deposited.
	Male.	Female.			
1883.					
April 25.....	5	4	120,000	.....	.....
" 26.....	3	2	60,000	.....	.....
" 30.....	4	2	60,000	.....	.....
May 1.....	15	10	300,000	105,000	Nanticoke River.
" 2.....	5	5	150,000	50,000	" "
" 3.....	12	9	270,000	55,000	" "
" 4.....	11	12	360,000	.....	.....
" 5.....	18	15	450,000	270,000	Nanticoke River.
" 6.....	12	16	480,000	135,000	" "
" 7.....	15	11	330,000	245,000	" "
" 8.....	..	..	.....	330,000	" "
" 9.....	..	..	.....	400,000	" "
" 10.....	..	..	.....	435,000	" "
" 11.....	..	..	.....	295,000	" "
	111	86	2,580,000	2,320,000	



BRANCH-HERRING (½ natural size). *Pomolobus vernalis* (*female*).

Perch on the Nanticoke River.

Date.	Fish taken.		Eggs taken.	Fish hatched.	Fish deposited.
	Male.	Female.			
1883.					
April 6	2	3	75,000	.....	.....
April 7	6	8	200,000	.....	.....
April 9	8	7	175,000	.....	.....
April 10	5	5	125,000	.....	.....
April 11	10	8	200,000	70,000	Nanticoke River.
April 12	9	9	225,000	180,000	Nanticoke River.
April 13	7	5	125,000	.....	.....
April 14	13	10	250,000	165,000	Nanticoke River.
April 15	..	..	.....	115,000	Nanticoke River.
April 16	8	6	150,000	180,000	Nanticoke River.
April 17	2	1	25,000	200,000	Nanticoke River.
April 18	1	1	25,000	115,000	Nanticoke River.
April 19	..	..	.....	230,000	Nanticoke River.
April 20	7	5	125,000	.....	.....
April 21	8	6	150,000	135,000	Nanticoke River.
April 23	4	4	100,000	20,000	Nanticoke River.
April 24	5	6	140,000	20,000	Nanticoke River.
April 25	4	3	75,000	110,000	Nanticoke River.
April 26	10	8	200,000	135,000	Nanticoke River.
April 27	3	3	75,000	.....	.....
April 28	6	5	125,000	.....	.....
April 29	..	..	.....	210,000	Nanticoke River
April 30	4	4	100,000	.....	.....
May 1	..	..	.....	70,000	Nanticoke River.
May 2	4	3	75,000	180,000	Nanticoke River.
May 3	9	6	150,000	70,000	Nanticoke River.
May 4	6	4	100,000	110,000	Nanticoke River.
May 5	11	8	200,000	90,000	Nanticoke River.
May 6	10	7	175,000	70,000	Nanticoke River.
May 7	6	5	125,000	130,000	Nanticoke River.
May 9	..	..	.....	270,000	Nanticoke River.
May 10	..	..	.....	160,000	Nanticoke River.
May 11	..	..	.....	110,000	Nanticoke River.
	168	140	3,490,000	3,145,000	

Hatching Station on the Wicomico.

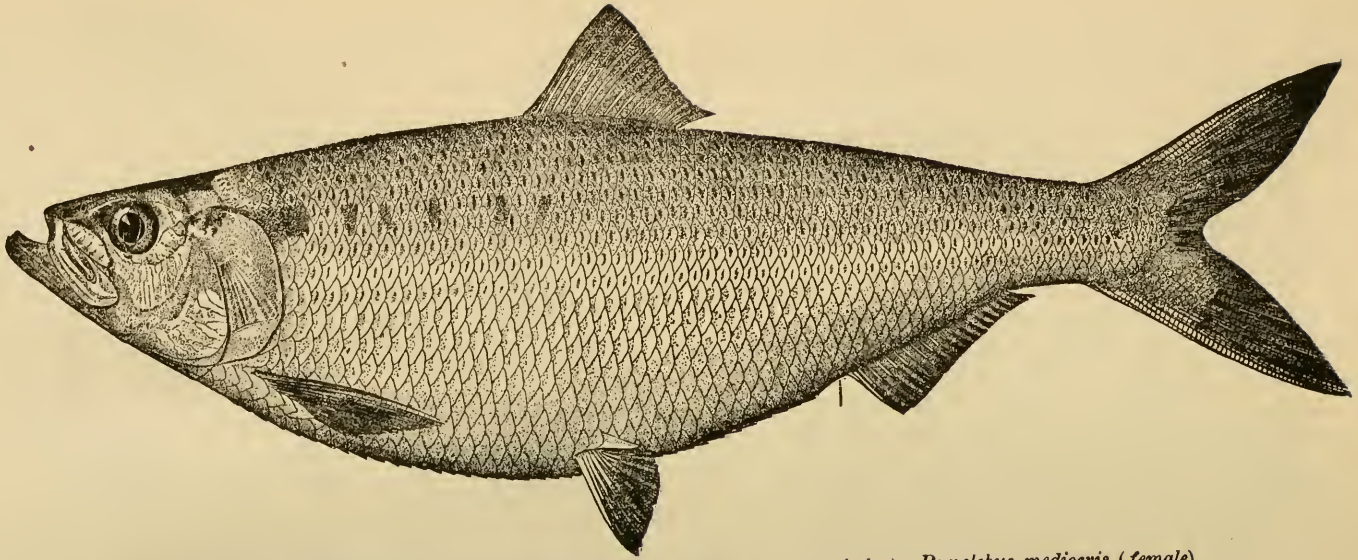
This river, after thorough examination, offered Sharp's point as the best location for a hatching station. It was the design of the commission to operate this station not only to supply this river, but also the Pocomoke, Manokin, and St. Martin's. This station has been conducted, so far as the fishermen and people of the county are concerned, with more satisfaction than any of the others. From the time it was determined to locate a station here there was a very commendable interest shown in it by the people in the vicinity, who kindly offered to render any assistance in their power. This was gratifying, indeed, to the commissioners, and we have availed ourselves of the kind offer. We hatched principally shad at this station, as the tables will show, but obtained a few perch and herring eggs.

Perch Operations on the Wicomico River.

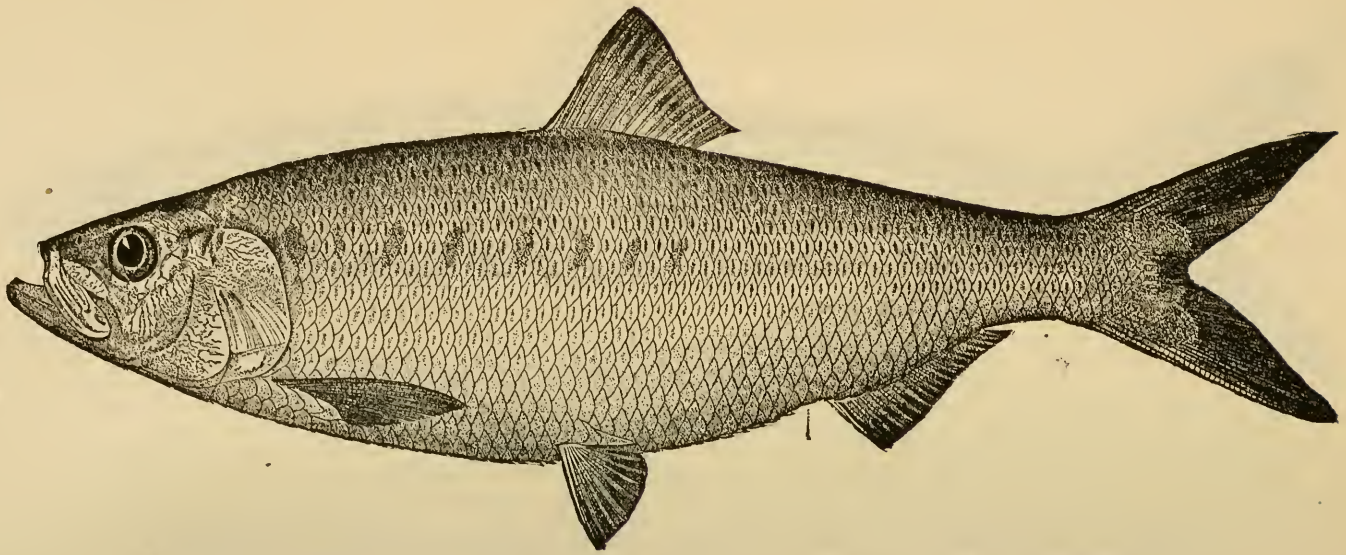
Date.	Fish taken.		Eggs taken.	Fish hatched.	Fish deposited.
	Male.	Female.			
1883.					
April 18	1	1	20,000	.....	.....
" 19	3	2	40,000	.....	.....
" 20	4	3	75,000	.....	.....
" 23	..	..	.....	90,000	Wicomico River.
	8	6	135,000	90,000	

Herring Operations on the Wicomico River.

Date.	Fish taken.		Eggs taken.	Fish hatched.	Fish deposited.
	Male.	Female.			
1883.					
April 16	10	7	175,000	.....	.....
May 7	8	5	125,000	.....	.....
" 11	2	1	25,000	.....	.....
April 23	..	..	.....	140,000	Wicomico River.
May 12	..	..	.....	100,000	" "
	20	13	325,000	240,000	



AUTUMNAL HERRING OR TAILOR SHAD (a little over ⅓ natural size). *Pomolobus mediocris* (*female*).



AUTUMNAL HERRING OR TAILOR SHAD (a little less than ⅓ natural size). *Pomolobus mediocris (male).*

Shad Operations on the Wicomico River.

Date.	Fish taken.		Eggs taken.	Fish hatched.	Fish deposited.
	Male.	Female.			
1883.					
April 17	2	1	25,000	.....	.....
April 18	3	2	50,000	.....	.....
April 19	4	2	30,000	.....	.....
April 20	..	..	.....	.....	.....
April 21	2	1	25,000	.....	.....
April 22	..	..	.....	.....	.....
April 23	..	..	.....	25,000	Wicomico River.
April 24	..	..	.....	35,000	Wicomico River.
April 25	1	1	25,000	.....	.....
April 26	6	3	75,000	.....	.....
April 27	5	3	75,000	50,000	Wicomico River.
April 28	1	1	25,000	25,000	Wicomico River.
April 30	5	2	50,000	.....	.....
May 1	6	2	50,000	75,000	Wicomico River.
May 3	2	1	25,000	.....	.....
May 4	2	1	25,000	.....	.....
May 5	1	1	25,000	.....	.....
May 7	6	3	75,000	50,000	Wicomico River.
May 8	16	7	175,000	.....	.....
May 9	6	3	75,000	.....	.....
May 10	3	3	75,000	50,000	Wicomico River.
May 11	4	2	50,000	90,000	Wicomico River.
May 12	1	1	25,000	.....	.....
May 14	4	2	50,000	400,000	Pocomoke River.
May 15	2	2	50,000	200,000	Wicomico River.
May 16	2	2	50,000	.....	.....
May 17	8	4	100,000	50,000	Wicomico River.
May 18	4	3	75,000	.....	.....
May 21	..	..	.....	50,000	Wicomico River.
May 23	..	..	.....	175,000	Wicomico River.
May 25	2	2	50,000	.....	.....
May 28	1	1	25,000	.....	.....
May 30	..	..	.....	50,000	Wicomico River.
June 1	..	..	.....	25,000	Wicomico River.
	99	56	1,400,000	1,350,000	

Station on the Chester River.

This brings us to the last station on the Eastern Shore, which is located at Millington, on the Chester river. Here we had wonderful luck in securing yellow perch eggs, which was early in the season, and before the run of shad commenced. Whilst we deem it expedient to operate this station, in order to give such a river as the Chester every advantage, we have never been able to hatch shad successfully, or rather we have never been able to procure the shad eggs to hatch. We have never succeeded in getting ripe shad in this river as soon as in the rivers further south, and the law stops the fishing earlier than in any of the others, so that the commission is cut off in its supply at both ends. We hope to see some radical changes in the law before another season.

Shad Operations on Chester River.

Date.	Fish taken.		Eggs taken.	Fish hatched.	Fish deposited.
	Male.	Female.			
1888.					
April 13	2	1	20,000	.....	.....
" 15	2	1	20,000	.....	.....
" 21	3	2	40,000	.....	.....
" 23	..	..	.....	20,000	Chester River.
May 3	4	3	60,000	.....	.....
" 4	4	2	40,000	.....	.....
" 6	3	2	40,000	.....	.....
" 7	3	2	40,000	.....	.....
" 8	6	5	100,000	.....	.....
" 9	4	2	40,000	.....	.....
" 10	2	1	20,000	30,000	Chester River.
" 11	3	3	60,000	.....	.....
" 12	..	..	.....	100,000	Sassafras River.
" 12	..	..	.....	100,000	Bohemia River.
" 13	3	2	40,000	.....	.....
" 14	2	1	20,000	150,000	Chester River.
" 15	2	1	20,000	.....	.....
" 17	2	1	20,000	.....	.....
" 20	2	1	20,000	100,000	Chester River.
" 22	4	2	40,000	.....	.....
" 24	2	1	20,000	.....	.....
" 25	2	1	20,000	.....	.....
" 27	3	2	40,000	.....	.....
" 30	..	..	.....	140,000	Chester River.
" 31	3	2	40,000	.....	.....
June 2	..	..	.....	20,000	Chester River.
" 5	..	..	.....	40,000	" "
	61	38	760,000	700,000	

Yellow Perch on the Chester River.

Date.	Fish taken.		Eggs taken.	Fish hatched.	Fish deposited.
	Male.	Female.			
1883.					
March 28.....	10	8	660,288	.....	.....
" 29.....	13	10	825,360	.....	.....
" 30.....	19	15	1,238,040	.....	.....
" 31.....	7	5	412,680	.....	.....
April 1.....	9	6	495,216	.....	.....
" 2.....	5	4	330,144	.....	.....
" 8.....	..	..	.....	548,560	.....
" 9.....	..	..	.....	675,360	.....
" 10.....	..	..	.....	1,038,040	.....
" 11.....	..	..	.....	312,680	.....
" 12.....	..	..	.....	370,216	.....
" 13.....	..	..	.....	255,144	.....
	63	48	3,961,728	3,200,000	
Distributed.					
April 16.....	..	..	.....	600,000	Sassafras River.
" 16.....	..	..	.....	600,000	Bohemia River.
" 16.....	..	..	.....	2,000,000	Chester River.

Druid Hill Hatching House.

When the Maryland Commission first obtained entire control of this hatching house, a full account of which was given in our last report, the carp had all been taken from the ponds, and the park commissioners objected to the use of them for carp raising, because it made them look so muddy, and thus spoiled the appearance of the ponds. The commission deeming it important to have not only the benefit of the ponds, but also the convenience of the location for distribution, made application to the board of park commissioners, with gratifying results, which appears by the following correspondence:

To the Chairman of Druid Hill
Park Commissioners, Baltimore, Md.

Dear Sir: The undersigned, Commissioners of the Maryland Fish Commission, desire to obtain from your honorable board permission to use the ponds in the park, which were formerly used for that purpose, as carp ponds. Our object in desiring to use them is to make the hatching house attractive and the ponds a source of profit and convenience to the commission.

Hoping to hear from you in a few days, we are, with great respect, Truly yours,

Thomas Hughlett,
G. W. Delawder,
Comm'rs of Fisheries of Maryland.

Baltimore, Oct. 1st, 1883.

Mr. Thomas Hughlett, Easton, Md.

Dear Sir: At a meeting of the park commission the following resolution was adopted:

Resolved, That the public park commission have pleasure in acceding to the desire of the Commissioners of Fisheries of the State in regard to the use of the carp ponds, and for the present will place No. 5 at their disposal.

Respectfully,

D. Baytice, *Sec'y.*

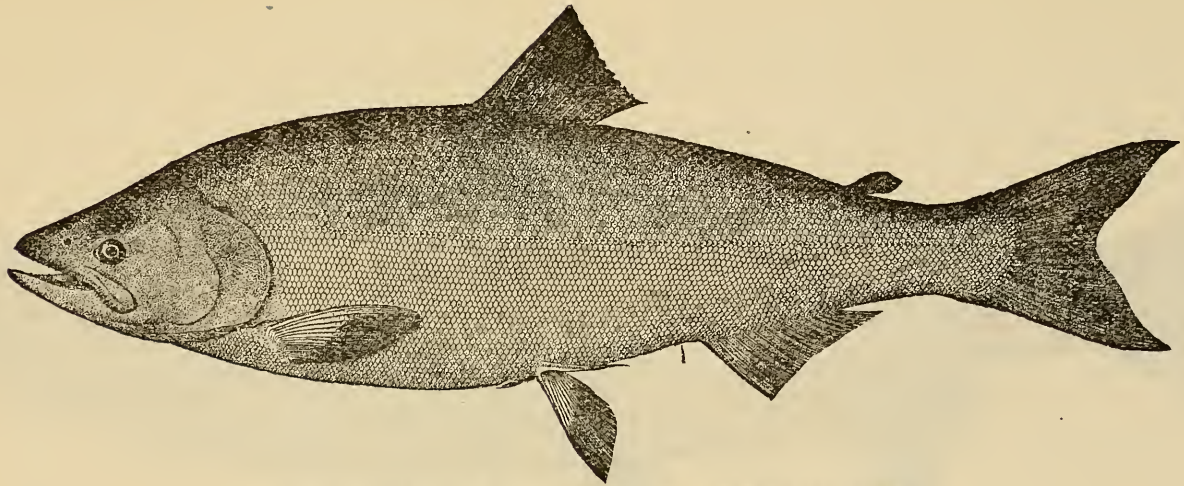
We took from the ponds, near Easton, forty-six breeders, weighing from one to four pounds, and placed them in this pond. Another year will find the Druid Hill ponds alive with young carp.

Of the white fish eggs received by the commission from Prof. Baird, one hundred thousand were hatched here with a small loss, and distributed to the various points shown in the tables.

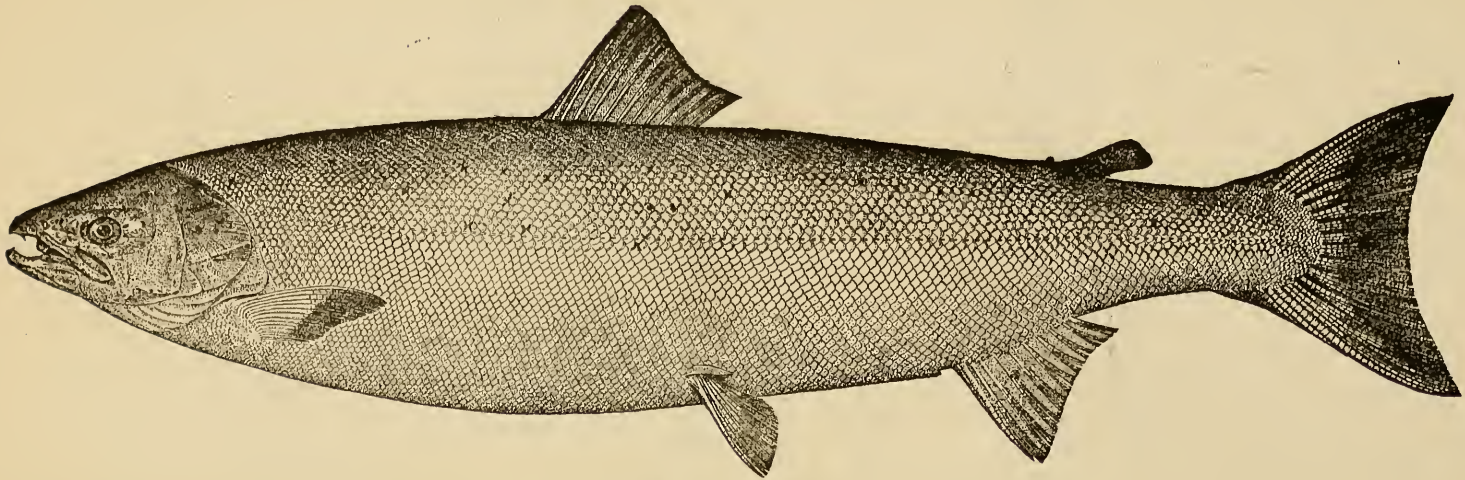
We also placed fifty thousand trout eggs in the hatching house, and fifteen thousand Schoodic salmon, all of which were hatched with comparatively small loss. The balance of the trout and salmon were hatched at Oakland, and an account of same is elsewhere reported.

White Fish at Druid Hill Park.

Date.	Eggs received.	Fish hatched.	Where deposited.	Number deposited.
1882.				
Dec. 30.	100,000	.....	.....	.....
1883.				
Jan. 24 to Feb. 25	.....	95,772	.....	.....
Feb. 14.	.....	.....	North East.....	15,000
Feb. 14.	.....	.....	Millington, Jarvis Mills.....	15,000
Feb. 15.	.....	.....	Magraw Mills, Cecil County	10,000
Feb. 15.	.....	.....	Ainswell's Mills, Cecil Co...	10,000
Feb. 19.	.....	.....	Relay House, Patapsco River.	10,000
Feb. 21.	.....	.....	Curtis Creek, Anne Arun. Co.	5,000
Feb. 23.	.....	.....	Mount Winans, Baltimore Co.	5,000
Feb. 27	.....	.....	Laurel, Patuxent River.....	15,000
Feb. 28.	.....	.....	Transquakin River	5,386
Feb. 28.	.....	.....	Chickamicomico River.....	5,386
	100,000	95,772		95,772



CALIFORNIA SALMON (1-5 natural size). *Oncorhynchus quinnat*



SALMON—*Salmo salar.*

Trout at Druid Hill Park.

Date.	Eggs received.	Fish hatched.	Where deposited.	Number deposited.
1882.				
Dec. 30.	50,000	.....	.....	.....
1883.				
Jan. 25 to Mar. 10.	.....	46,913	.....	.....
" 10.	.....	.....	Relay House, Patapsco River.	5,000
" 13.	.....	.....	Perch Creek, Cecil County...	10,000
" 14.	.....	.....	Principio Creek, Cecil County	10,000
" 16.	.....	.....	Octorara River, Cecil County	10,000
" 28.	.....	.....	Taneytown, (Peter Smith)...	2,500
" 28.	.....	.....	Taneytown, (John Stoufer)..	2,500
" 31.	.....	.....	Baltimore City, (Jas. F. Neel)	1,000
April 11.	.....	.....	Geo. Bayer, Pa.....	300
" 11.	.....	.....	King's Creek.....	5,613
	50,000	46,913		46,913

Schoodic Salmon at Druid Hill Park.

Date.	Eggs received.	Fish hatched.	Where deposited.	Number deposited.
1883.				
Jan. 22..	15,000	.....	.....	.....
M'rch 20 to April 4.	.....	12,000	.....	.....
April 4.	.....	.....	Principio Creek, Cecil County	4,000
April 4.	.....	.....	Perch Creek, Cecil County..	4,000
April 11.	.....	.....	Tuckahoe Creek, Cecil Co...	3,343
April 11.	.....	.....	Commissioner Delawder.....	657
	15,000	12,000		12,000

Oakland.

In the early part of the fall a hatching house was put in order for the reception of trout spawn from the various kinds of that species. Four hundred thousand eggs were received from New Hampshire, twenty thousand from California, and five thousand from Prof. Baird, of the U. S. Commission. A part of these were transferred to the Druid Hatching House, Baltimore. They were all successfully brought out, but those at Oakland were seized with a disease known as the fungus, and before a remedy could be found to arrest the contagion two hundred thousand died; the balance, after their recovery, grew rapidly until the month of June, when they were distributed.

Those of the California breed escaped any mishap, and were all removed to Deep Creek, where I am sure they will mature and be a source of great profit to the state for future propagation. Five thousand land-locked salmon were hatched and placed in the same stream.

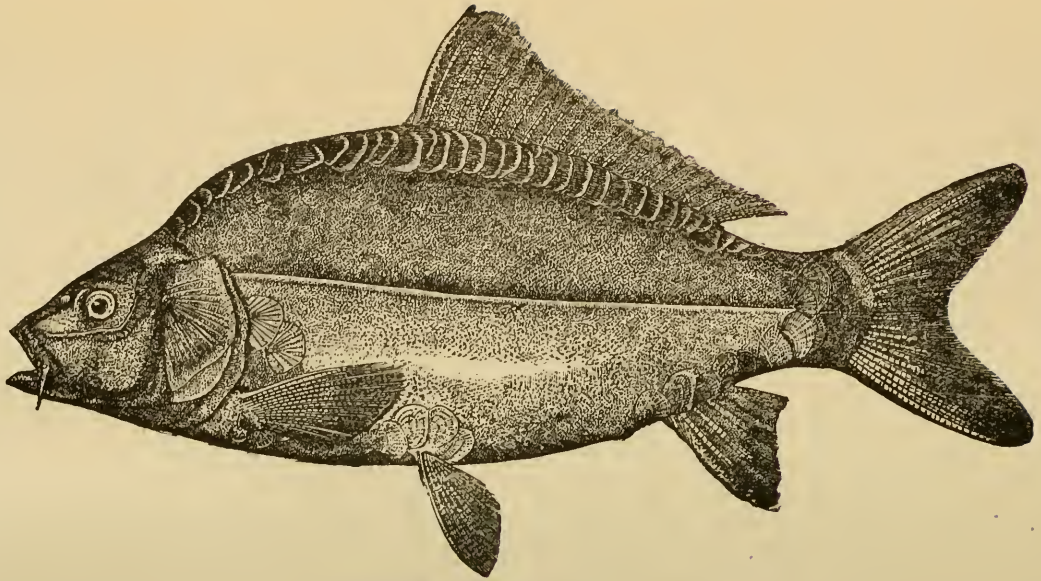
In the distribution of brook trout, we have looked more for suitable streams than individual. We have sought such streams as we considered calculated to insure their sustenance and growth.

They have been distributed as follows:

The Lake, at Mt. Lake Park	8,000
Lake Youghigheny	10,000
Deep Creek	20,000
Frederick County streams	10,000
Carroll County streams	15,000
Baltimore County streams	10,000
Howard County streams	13,000
Potomac River	11,000
	97,000

Havre de Grace.

In the month of April we rowed our men to Havre de Grace, on the Susquehanna. Ripe fish were scarce until the approach of warm weather, in May, when they were secured in fair quantities. Our mode of procedure was to go out with the gillers about five o'clock in the evening and remain out all



LEATHER CARP (*Cyprinus Carpio*).
(⅓ natural size.)

night, examining each fish as taken from giller's nets. Whenever one was secured in a proper condition the eggs were taken and at once impregnated, brought into the hatching station, and placed in hatching boxes. The same method was used in handling white perch.

We succeeded in hatching out eight million young shad and six hundred thousand white perch. We made the following distribution of our work from this section :

The first distribution was made to the Severn river, in Anne Arundel county, where we placed two million of shad and one hundred thousand white perch, the largest distribution ever made at one time in any river in the United States.

We next put six hundred thousand in the Patuxent, near Laurel, in Prince George county. We then put in the Patapsco, below Relay station—five hundred thousand shad and fifty thousand perch. The balance were placed in the Susquehanna.

Shad placed in Susquehanna River	4,900,000
In the Severn River	2,000,000
In the Patuxent River	600,000
In the Patapsco River	500,000
	8,000,000
White Perch in Susquehanna River	450,000
White Perch in Severn River	100,000
White Perch in Patapsco River	50,000
	600,000

The German Carp.

We have heretofore given much space in our reports to the consideration of this fish. The introduction of it into our waters was a step in the progress of pisciculture, which, if properly followed up, will prove to be the greatest advantage to our people. We have in the ponds near Easton the three varieties of carp—leather, mirror and scale. We have observed that the mirror grows more rapidly than either of the other varieties, and that the scale carp makes the slowest growth. But even the scale carp grow with surprising rapidity. When the ponds near Easton were drawn off this year

we found that some of the breeders, now three years old, weighed over ten pounds each.

In some of the former reports we published letters from some of the most distinguished gentlemen of the state, who, at the request of one of the commissioners, breakfasted upon the scale carp, pronouncing them to be as edible as any of our native fish. They have frequently been tried since upon the tables of many of our people, and the opinion above expressed has been confirmed. With that fact recognized, it becomes the duty of the commission, as it has certainly been its effort, to get them as generally distributed as possible.

This fish, when first introduced, was considered a pond fish; but the experiments of this commission during the past few years have shown that they will thrive and grow rapidly in both fresh and salt water streams. As soon as we became cognizant of that fact, and ever since then, we have endeavored each year to deposit as many as we could possibly spare in the rivers and creeks of the state.

The introduction of the carp offered to our people the first opportunity known to us to engage in the business, so frequent and so profitable in Europe—*fish farming*. The fish ponds in Europe are as carefully constructed and as carefully attended to as our corn or wheat fields, and they find it quite as profitable. It costs but a trifle to construct a pond sufficient to raise carp, and if the pond has not vegetable matter enough to feed them, the refuse of the kitchen will do so.

The commission has now well-stocked ponds near Easton, and also at Oakland, and have recently put forty-six fine breeders in the park ponds. We have every reason to expect that next year our supply will be large enough to meet all applications from individuals, and have a few thousand left for the rivers. We have distributed this year both from Oakland and the Talbot ponds, and subjoin full tables showing the distribution.

Much attention has been given to the propagation and distribution of the German carp, and we deem it a duty to throw out some suggestions as to the construction of carp ponds. A carp pond can be erected on any stream, no mat-

ter how small, so that there is running water all the year around, for no fish can exist without water; but it should be made on one side of the channel or bed of the stream, as a matter of protection from high water and floods. The water should be diverted from the main channel by means of a ditch or pipes. By this means a uniform flow of water into the pond is secured, and all danger from floods are avoided. Besides, you are exempt from the presence of other fish, you secure a uniform flow of water, while in flush times or in drought, while it is only necessary to keep your pond full, and by this means your water will be of a higher temperature than if the whole brook ran into it. Vegetation will spring up in great quantities, and grow faster; fish food will multiply; the growth of carp will be greatly stimulated by the refuse. An abundance of food will be found in a pond thus constructed. You will have a uniform depth the year round; the sediment in the bottom will be evenly distributed, for a soft and muddy bottom to a carp pond is indispensable. Another advantage: you can control your enterprise; you can shut off the water and draw off your pond; you can readily take or remove your fish at any time. Carp should not be permitted to spawn twice in the same pond.

The first hatching should be removed before the second spawning takes place, for a dozen good breeders is sufficient to stock a pond of an acre beyond its capacity to maintain. Therefore it is absolutely necessary that the young should be removed to another pond, and at a year old, if well-fed, should be sent to market, or at least all those of vigorous growth, for by this means the balance of the first carp will be given better opportunities for rapid growth and improvement. No one need fear of exhausting his stock by utilizing his first crop at a year old, for if he preserves his breeders they will supply their places each succeeding year. Don't stint their food. Give them plenty of rye, oats, wheat, and corn; sow it on the water; it will sink to the bottom in the mud; it will swell and the fish will root out every grain; give them any refuse from the kitchen; boiled potato rinds, cabbage and carrots; they will refuse nothing that is edible in the vegetable line. Feed

liberally and you will be astonished at the size they will attain in twelve months.

Your commissioner has noticed with great satisfaction the growth of carp the past summer. Where a pond was stocked last April with carp two and one-half inches long, at this writing are now fifteen inches long, and will weigh from two to two and a-half pounds.

The following distribution of carp in the localities and to the parties named has been made:

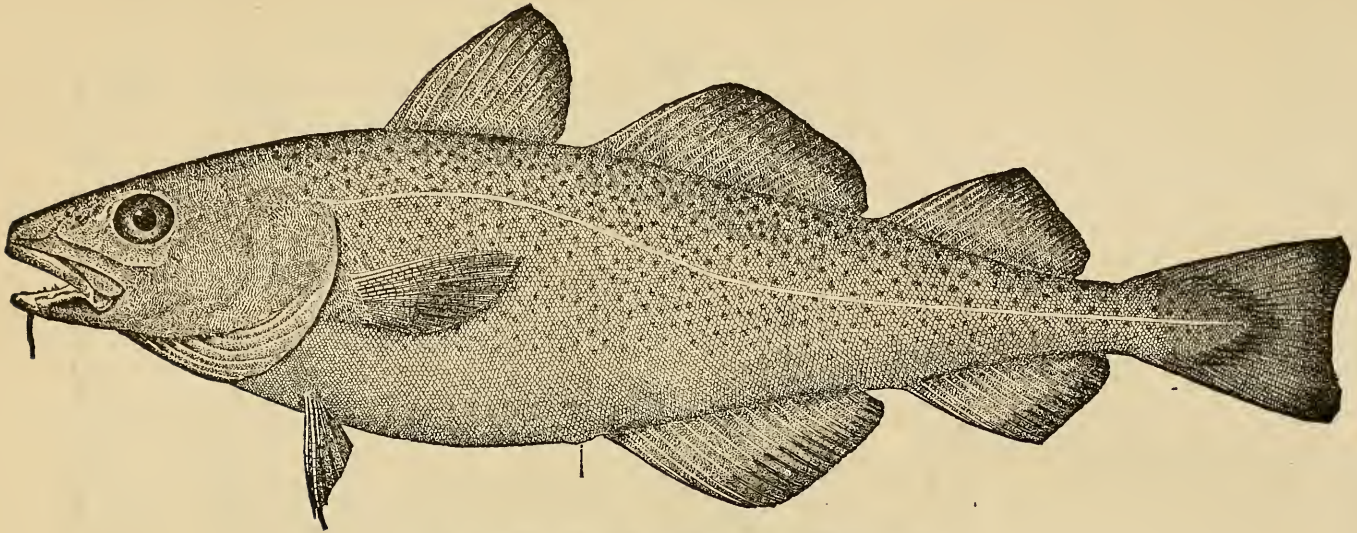
From Oakland Ponds.

Chris. Seldeer	Garrett County	25
Chris. Snider	" "	25
Edward Errison	Frederick County	25
Cyrus Helfedestine	" "	25
Henry Hett	" "	25
George L. Fox	" "	25
Daniel V. Harp	" "	25
William B. Wheeler	Washington County	25
A. C. Huffner	" "	25
J. L. Nicodemus	" "	25
John M. Kolb	" "	25
John W. Wilt	" "	25
John Martin, Jr.	" "	25
J. D. Coogle	Frederick County	25
John A. Degrange	" "	25
Edward Hobbs	" "	25
Martin C. Coblentz	" "	25
C. K. Thomas	" "	50
Daniel Hinebough	" "	25
H. F. Leeman	Washington County	25
Samuel J. Beechy	Garrett County	25
Daniel Grove	Frederick County	25
Zack. Thomas	" "	25
George Rodock	" "	25
David McKenzie	" "	25
R. C. Kefauver	" "	25
George W. Hoffman	" "	25
Martin Hake	" "	25
H. F. Leeman	Washington County	25
B. H. Wyland	" "	25
D. W. Doub	" "	25
George W. Hartman	" "	25
Ezra Williams	" "	25

J. L. Worthington	Washington County	25
L. Gaurd	" "	25
D. E. Kefauver	" "	25
Henry Hoffman	" "	25
George Dun	" "	25
Levi Pierce	" "	25
C. Lewis	" "	25
E. H. France	" "	25
W. W. Walker	" "	25
David M. Bowers	Carroll County	25
A. Blank	" "	25
George Shaw	" "	25
George M. Bear	" "	25
M. A. E. Bizer	" "	25
J. D. McGuire	Howard County	100
J. N. Delashmutt	" "	25
Odus Worthington	" "	25
H. G. B. Crawford	Cecil County	25
John H. Zutz	Carroll County	25
George Houck	Frederick County	25
J. D. Coodle	" "	25
Lewis H. Kefauver	" "	25
John R. Jones	" "	25
John O. Hayes	" "	25
Joshua D. Ahalt	" "	25
Ezra Willard	" "	25
John Reeman	Baltimore City	25
Henry Reeman	" "	25
George Peters	Montgomery County	25
W. K. Hall	" "	25
W. A. Brydon	Garrett County	25
Thomas Gary	" "	25
Samuel Johnson	" "	25
John Weir	Allegany County	25
Potomac River		500
		2,300

Carp Distributed from Ponds at Easton.

Date.	Name	Town.	County.	No.
1882.				
Dec. 16.	W. H. Rowley	Girdletree	Worcester	300
Dec. 16.	George W. Bishop	Snow Hill	Worcester	300
Dec. 16.	Daniel Paggett		Frederick	40
Dec. 18	George L. Smith	Monrovia		40
Dec. 18.	James E. Hignutt	Denton	Caroline	40
Dec. 26.	Tolun Martin	Mount Airey	Frederick	40
Dec. 26.	T. C. Crockett		Baltimore	40
Dec 28.	S. S. Boggs		Baltimore	40
1883.				
Jan. 5..	John Stokes		Prince George's	40
Jan. 5..	A. F. Lloyd		Baltimore	40
Jan. 5..	George Jones		Baltimore	40
Jan. 11..	J. L. Long		Frederick	40
Jan. 11..	William E. Long		Frederick	40
Jan. 16..	Isaac D. Keetzler		Baltimore	40
Jan. 20..	John Koogle	Keedysville	Washington	40
Feb. 7..	William Wilkins		Baltimore	40
April...	Jacob W. Dutro	Keedysville	Washington	40
April ..	W. T. Brice	Rock Hall P. O	Kent	40
April ..	J. W. Sternwell	Woodsborough	Frederick	40
April...	W. C. Ligget	Annapolis Junction	Anne Arundel	40
April...	R. L. Brockett	Annapolis Junction	Anne Arundel	40
April...	Mrs. Milton Whitney	Waterburg	Anne Arundel	40
April...	Hon. W. T. Hepbron		Kent	100
April...	Benjamin Draper	Denton	Caroline	40
April...	R. C. Carter	Denton	Caroline	40
April...	C. J. Redden	Denton	Caroline	40
April...	Joseph A. Deakyn	Denton	Caroline	40
April...	James G. Redden	Denton	Caroline	40
April...	James G. Raymond	Still Pond	Kent	40
April...	J. Ringgold	Chestertown	Kent	40
April...	A. Mitchell	Elkton	Cecil	100
April ..	J. T. McCullough	W. Aimwell Mills	Cecil	100
April...	G. W. Lockwood	Middletown	Delaware	40
April...	John Vincent	Linkwood	Dorchester	40
April...	David Bowers	Taneytown	Carroll	40
April...	T. P. Phelps, Jr	Cambridge	Dorchester	40
April...	H. M. Vickers	Chestertown	Kent	100
April...	O. W. Benjamin	Bayview	Cecil	40
April...	W. H. Comegys	Greensborough	Caroline	40
April...	J. H. George	Hillsborough	Caroline	40
April...	D. M. Henry, Jr.	Cambridge	Dorchester	13
April...	J. W. Hignutt	Denton	Caroline	40
April...	Charles Murphy	Denton	Caroline	40
April...	James E. Hignutt	Denton	Caroline	40
April...	John Henry	Longwoods	Talbot	20
Nov. 17.	James L. Beck, Jr	Rock Hall	Kent	50
Nov. 17.	S. M. Johnson	North East	Cecil	50
Nov. 17.	Martin Snyder	Boonsborough	Washington	50
Nov. 17.	George C. Moore	Hillsborough	Caroline	50
Nov. 17.	James F. Neal	Baltimore	Baltimore	50
Nov. 17.	D. C. Blackstone	Spence P. O	Worcester	50
Nov. 16.	T. G. Hall		Anne Arundel	50



COD-FISH (a little over ½ natural size). *Gadus Morrhua.*

Carp Distributed from Ponds at Easton—continued.

Date.	Name.	Town.	County.	No.
1883.				
Nov. 17.	H. V. P. Crawford...	.....	Cecil	50
Nov. 17.	E. C. Richardson.....	Spence P. O.....	Worcester	50
Nov. 17.	E. G. Gordy..... ..	Whaleyville.....	Worcester	50
Nov. 17.	Jacob Keller.....	New London.....	Frederick	50
Nov. 17.	Thomas Willis.....	Lynch's Station.. ...	Kent	100
Nov. 17.	William McMullen...	Port Deposit	Cecil	50
Nov. 17.	Edward Plumber....	Weston Station.....	Kent	50
Nov. 16.	E. J. Riley.....	Annapolis..... ..	Anne Arundel....	50
Nov 19.	Gen. J. R. Herbert...	Woodstock.....	Howard	200
Nov. 19.	F. A. Emory.	Centreville.....	Queen Anne's ...	50
Nov. 19.	George W. Etzler....	Johnsville.....	.....	50
Nov. 19.	R. H. Jones.....	Jewell	Anne Arundel....	50
Nov. 19.	Edward S. Pierce....	Dulaney's Valley.....	Baltimore	50
Nov. 19.	J. F. Hickson.....	St. John's Run.....	Morgan co., W.Va.	25
Nov. 19	E. L. McGines.....	Chestertown.....	Kent	50
Nov. 16.	Edward A. Robinson.	.....	Baltimore	50
Nov. 25.	Ella A. Ward.....	Texas.....	Baltimore	50
Nov. 28.	Jacob Moser.....	.....	Frederick	50
Nov. 28.	Edward J. Moser	.....	Frederick	50
Nov. 28	Louis Moser.....	.....	Frederick	50
Nov. 28.	J. W. Moser.....	.....	Frederick	50
Nov. 29.	W. H. Neal	Sudlersville.....	Queen Anne's ...	50
Nov. 29.	"Rolting Bridge"....	.....	Queen Anne's	200
Nov. 29.	Wye Mills.....	.....	Talbot	300
Nov. 21.	Potts's Mills.....	....	Talbot	200
Nov. 21.	Miles River.....	.....	Talbot	300
Nov. 29.	S. M. Kefauver	Middletown.....	Frederick	50
Nov. 30.	S. Weant.....	York Road..... ...	Baltimore	50
Nov. 22.	"Paper Mills".....	.....	Talbot	600
Nov. 30.	J. M. Delashmutt....	Cooksville	.....	50
Nov. 30.	J. R. McNash.....	Towlin Creek.....	Caroline.....	50
				5,858

Number at these ponds for distribution.....3,000

Summary of Fish Distributed.

Tuckahoe Station—		
Shad	7,000,000	
White Fish	49,353	
Trout	9,798	
Herring	197,000	
White Perch	252,000	
		7,508,151
Kingston Station—		
Herring	70,000	
White Perch	1,775,000	
		1,845,000
Nanticoke Station—		
Shad	590,000	
Herring	2,320,000	
Perch	3,145,000	
		6,055,000
Wicomico Station—		
Perch	90,000	
Herring	240,000	
Shad	1,350,000	
		1,680,000
Chester Station—		
Shad	700,000	
Yellow Perch	3,200,000	
		3,900,000
Druid Hill Hatching Station—		
White Fish	95,772	
Trout	46,913	
Schoodic Salmon	12,000	
		154,685
Oakland Station—		
Trout	200,000	
Carp	2,300	
		202,300
Susquehanna—		
Shad	8,000,000	
White Perch	600,000	
		8,600,000
Easton Carp Ponds		8,858
		29,853,994

Conclusion.

Having reported as fully and concisely as we were able our operations for the past year, little further remains to be said in relation to the commission itself. It is proper to say, however, that the commission made unusual exertions again during the past year to get some ripe rock, and spent no little money in the endeavors. We secured one ripe female rock, but unfortunately were not able to procure a ripe male at the same time, and hence we lost the benefit of her because the eggs could not be impregnated. We shall not cease our efforts in that direction, but shall continue them with renewed vigor, and think we have already made arrangements with the superintendent of the North Carolina commission to send us a man thoroughly familiar with that branch of the service.

In our last report we detailed an account of a successful experiment in crossing the perch with the rock. We made the same experiments this year, and twice succeeded in hatching perch eggs, impregnated with the milt of the rock.

We have reserved probably the most important part of our report for the last, that is, to urge upon your excellency the importance of recommending to the legislature the absolute necessity of passing better laws for the protection of fish in this state. It does seem that nearly everything else is better protected than the fish, and we know of nothing that needs it more. It is almost a physical impossibility for our fish to run the gauntlet of our rivers to reach their spawning ground. They are absolutely blockaded by the seines and nets of the fishermen.

We respectfully suggest that the legislature be recommended to pass a law—

1st. Prohibiting all fishing, except with hook and line, between the tenth day of May and the fifteenth of September in each and every year.

2d. Prohibiting the sale of any fish at any season of the year weighing less than a half pound.

3d. Authorizing the commissioners of fisheries to fish at any time during the year, for the purpose of propagation, provided

they will see that all unripe fish be returned immediately to the waters.

4th. That the penalties for the violation of the law be made severe, and the possession of fish, under size and out of season, be *prima facie* evidence of the violation of the law.

We have now concluded our report, except to say to your excellency that we are indebted to the Potomac and Chester River Steamboat Companies and the B. and O. R. R Company for passes, and all of the railroad and steamboat companies for the free carriage of the state's fish. Also to express the obligation we are under to Prof. Baird, of the U. S. Commission, for various courtesies extended us during the year, and to thank your excellency for your prompt attention to, and hearty co-operation in, the work of the commission.

Respectfully submitted.

THOMAS HUGHLETT,
G. W. DELAWDER,
Commissioners of Fisheries.

Commissioners on Fisheries.

UNITED STATES.

Professor SPENCER F. BAIRD ..... Washington, D. C.

ALABAMA.

CHARLES S. G. DOSTER ..... Prattville.
D. B. HUNTLEY ..... Courtland.

ARIZONA.

JOHN J. GOSPER ..... Prescott.
RICHARD RULE ..... Tombstone.
Dr. J. H. TAGGART ..... Yuma.

ARKANSAS.

N. B. PEARCE ..... Osage Mills.
JAMES HOMBROOK ..... Little Rock.
JOHN E. REARDON ..... Little Rock.

CALIFORNIA.

S. R. THROCKMORTON ..... San Francisco.
B. B. REDDING ..... San Francisco.
J. D. FARWELL ..... Alameda.

COLORADO.

W. E. SISTEY ..... Brookvale.

CONNECTICUT.

W. M. HUDSON ..... Hartford.
ROBERT G. PIKE ..... Middletown.
JAMES A. BILL ..... Lyme.

DELAWARE.

Mr. MOORE ..... Wilmington.

GEORGIA.

J. T. HENDERSON, Commissioner of Agriculture and *ex-officio* Commissioner of Fisheries ..... Atlanta.
Dr. H. H. CAREY, Superintendent of Fisheries ..... La Grange.

ILLINOIS.

N. K. FAIRBANK ..... Chicago.
S. P. BARTLETT ..... Quincy.
S. P. McDOLL ..... Aurora.

IOWA.

B. F. SHAW.....Anamosa.
A. A. MOSHER, assistant for north-western portion...Spirit Lake.

KANSAS.

D. B. LONG.....Ellsworth.

KENTUCKY.

WILLIAM GRIFFITH, President, 166 W. Main St...Louisville.
JOHN B. WALKER.....Madisonville.
Hon. C. J. WALTON.....Munfordsville.
Hon. JOHN A. STEELE.....Versailles.
W. C. PRICE.....Danville.
P. H. DARBY.....Princeton.
Dr. S. W. COOMBS.....Bowling Green.
Dr. W. VAN ANTWERPT.....Mt. Sterling.
Hon. J. M. CHAMBERS.....Independence.
A. H. GOBLE.....Catlettsburg.

MAINE.

HENRY O. STANLEY.....Dixfield.
E. M. STILWELL, Assistant Commissioner.....Bangor.

MARYLAND.

G. W. DELAWDER.....Oakland.
THOMAS HUGHLETT.....Easton.

MASSACHUSETTS.

THEODORE LYMAN.....Brookline.
E. A. BRACKETT.....Winchester.
ASA FRENCH.....Boston.

MICHIGAN.

ELI R. MILLER.....Richland.
A. J. KELLOGG.....Detroit.
Dr. J. C. PARKER.....Grand Rapids.

MINNESOTA.

First District—DANIEL CAMERON.....La Crescent.
Second District—WILLIAM W. SWENEY, M. D.....Red Wing.
Third District—R. OMSBY SWENEY, Chairman.....St. Paul.

MISSOURI.

I. G. W. STEEDMAN, Chairman, No. 2803 Pine St....St. Louis.
JOHN REID.....Lexington.
SILAS WOODSON.....St. Joseph.

NEVADA.

H. G. PARKER.....Carson City.

NEW HAMPSHIRE.

DR. EDWARD SPAULDING.....Nashua.
LUTHER HAYES.....South Milton.
ALBINA H. POWERS.....Plymouth.

NEW JERSEY.

DR. B. P. HOWELL.....Woodbury.
COL. E. J. ANDERSON.....Trenton.
THEODORE MORFORD.....Newton.

NEW YORK.

R. BARNWELL ROOSEVELT, 76 Chambers St.....New York.
EDWARD M. SMITH.....Rochester.
RICHARD U. SHERMAN.....New Hartford.
EUGENE G. BLACKFORD, 809 Bedford Avenue.....Brooklyn.

NORTH CAROLINA.

HON. MONTFORD McGEHEE, Commissioner of Agriculture.....Raleigh.
S. G. WORTH, Superintendent of Fisheries.....Morgantown.

NEBRASKA.

ROBERT R. LIVINGSTON.....Plattsmouth.
H. S. KALEY.....Red Cloud.
W. L. MAY.....Fremont.

OHIO.

C. W. BOND, President.....Toledo.
H. C. POST, Treasurer.....Sandusky.
L. A. HARRIS, Secretary.....Cincinnati.

PENNSYLVANIA.

H. J. REEDER.....Easton.
BENJAMIN L. HEWIT.....Hollidaysburg.
JAMES DUFFY.....Marietta.
JOHN HUMMEL.....Selinsgrove.
ROBERT DALZEL.....Pittsburg.
G. M. MILLER.....Wilkesbarre.

RHODE ISLAND.

ALFRED A. REED.....Providence.
JOHN H. BARDEN.....Rockland.
NEWTON DEXTER.....Providence.

SOUTH CAROLINA.

A. P. BUTLER.....Hamburg.

TENNESSEE.

W. W. McDOWELL.....Memphis.
GEORGE F. AKERS.....Nashville.
H. H. SNEED.....Chattanooga.

TEXAS.

J. H. DINKINS.....Austin.

UTAH.

Professor J. L. BARFOOT, Curator Desert Museum...Salt Lake City.

VERMONT.

HERBERT BRAINERD.....St. Albans.
H. A. CUTTING.....Lunenburg.

VIRGINIA.

Col. MARSHALL McDONALD.....Lexington.

WEST VIRGINIA.

HENRY B. MILLER.....Wheeling.
CHRISTIAN S. WHITE.....Romney.
N. M. LOWRY.....Hinton.

WISCONSIN.

The Governor, *ex-officio*.....Madison.
PHILO DUNNING, President.....Madison.
J. V. JONES.....Oshkosh.
C. VALENTINE, Secretary and Treasurer.....Janesville.
MARK DOUGLAS.....Melrose.
JOHN F. ANTISDEL.....Milwaukee.
CHRISTOPHER HUTCHINSON.....Beetown.
H. W. WELSHER, Superintendent.....Madison.

WYOMING TERRITORY.

HENRY B. RUMSEY.....Red Buttes.

DEPUTIES.

Dr. M. C. BARCKWELL.....Cheyenne.
OTTO GRAMM.....Laramie.

CANADA.

W. F. WHITCHER.....Ottowa, Canada.

NEW BRUNSWICK.

W. H. VENNING, Inspector of Fisheries.....St. John.

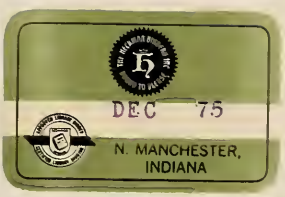
NOVA SCOTIA.

W. H. ROGERS, Inspector of Fisheries.....Amherst.

PRINCE EDWARD ISLAND.

J. H. DUVAR, Inspector of Fisheries.....Alberton.

BRITISH COLUMBIA.

ALEX. C. ANDERSON, Inspector of Fisheries.....Victoria.

UNIV. OF MD COLLEGE PARK
3 1430 03833084 3